

### **ABSTRACT OF THE INVENTION**

This invention uses large surface to volume ratio materials for separation, release layer, and sacrificial material applications. The invention outlines the material concept, application designs, and fabrication methodologies. The invention is demonstrated using deposited column/ void network materials as examples of large surface to volume ratio materials. In a number of the specific applications discussed, it is shown that it is advantageous to create structures on a laminate on a mother substrate and then, using the separation layer material approach, to separate this laminate from the mother substrate using the present separation scheme. It is also shown that the present materials have excellent release layer utility. In a number of applications it is also shown how the approach can be used to uniquely form cavities, channels, air-gaps, and related structures in or on various substrates. Further, it is demonstrated that it also can be possible and advantageous to combine the schemes for cavity formation with the scheme for laminate separation.